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37 C.F.R. 1.8

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Date

Steven L. Highlander

**PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Alvarez, et al.

Serial No.: 09/446,581

Filed: August 27, 2001

For: Fe(0)-BASED BIOREMEDIATION OF  
AQUIFERS CONTAMINATED WITH  
MIXED WASTES

Group Art Unit: 1724

Examiner: Prince, Fred G.

Atty. Dkt. No.: IOWA:020/TMB

**I. AMENDMENT; AND II. RESPONSE TO OFFICE ACTION DATED JULY 31, 2002**

Commissioner for Patents  
Washington, D.C. 20231

Commissioner:

This paper is submitted in response to the Office Action dated July 31, 2002 for which the three-month date for response was October 31, 2002.

A request for a two-month extension of time to respond is included herewith along with the required fee. This two-month extension will bring the due date to December 31, 2002, which is within the six-month statutory period. Should such request or fee be deficient or absent, consider this paragraph such a request and authorization to withdraw the appropriate fee under 37 C.F.R. §§ 1.16 to 1.21 from Fulbright & Jaworski L.L.P. Account No.: 50-1212/IOWA:020.

Reconsideration of the application is respectfully requested.

### I. AMENDMENT

Please make the following amendments:

#### In the Specification

Please insert the following Abstract on a separate page following the claims in the specification.

#### --ABSTRACT

Disclosed are methods, devices and apparatus for bioremediation of mixed waste aquifers, based on a synergistic combination of reductive treatment using zero-valent iron and anaerobic biotransformations. Also disclosed are methods for *in situ* and *ex situ* remediation of groundwater and wastewater *via* these iron-bacterial compositions in a variety of devices including batch reactors, permeable and semipermeable reactive barriers, flow-through reactors, fluidized bed reactors, and sediment tanks. --

#### In the Claims

Please amend claims 1, 9, 11, 42, and 56 as follows:

*B1* 1. (Amended) A device comprising a composition comprising zero-valent iron and a culture of one or more autotrophic hydrogenotrophic bacteria.

*B2* 9. (Amended) A device comprising a composition comprising zero-valent iron and a culture of one or more autotrophic hydrogenotrophic bacteria, comprised within an environmental site.

*B3* 11. (Amended) The device of claim 9, further defined as an *in situ* reactive barrier.